

Importance of Traditional Agricultural Knowledge Systems and Food Production in the Post-war Development of the Northern and Eastern Provinces of Sri Lanka

Introduction

Sri Lanka, once the most self sufficient and prosperous country in the Asian region, was undergoing a very critical period during the last thirty years, due to the civil disturbance that took place in the North and the East. Due to this fact, two thirds of the marine fishing area, major areas of rice production and other essential agricultural and livestock production as well as natural resource utilisation were completely destroyed or threatened. As a result, many of these items had to be imported into the country at the expense of a colossal value of foreign exchange. In addition, the money that could have been used for education, health, other social welfare and national development had to be spent on the importation of arms and other warfare items to combat the civil war and feed hundreds and thousands of refugees. However, thanks to the determination of the government, the committed and life sacrificing service of the armed forces and the invaluable patience of the public, today, we all lead a free and peaceful living after the liberation of the North and East and bringing out normalcy to these two areas.

The North and East have great potential for improving national economy by contributing to the local food security through agricultural and fisheries production. People in the North and East are traditionally

farming community. Their culture is mostly agrarian based. These traditional farmers have generations of experience about the soil, climate and agricultural technology which is unique to their system of production. They have their own cultivation techniques developed by their forefathers and practised over generations. These practices have been time tested and proven to be more appropriate than the modern agricultural methodologies. These traditional farmers never had an opportunity to practise their most unique and effective farming technology during the past three decades due to the prevailed unsettled situation in the area.

Presently, with liberation of unsettled areas of the country and the development programmes such as "*Uthuru Wasanthaya*" and "*Nagenahira Navodaya*" launched by the government with gigantic investment with the concept of "*Api Wawamu - Rata Nagamu*", the right approach and directions are vital to obtain the maximum benefit of the investment made. In order to achieve this, the available resources in these areas, the potential profitable enterprises and the knowledge system of the farming community should be thoroughly investigated, and appropriate programmes should be implemented with the correct approach. Therefore, this paper aims at highlighting certain critical concepts that should be followed in this process.

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Community and Culture

The community in the North is predominantly Tamils with few Sinhalese and Muslims. The Tamil community in the North are mainly from an agrarian society where their main profession is farming. They are experienced in cultivation. Mannar is one of the major "rice bowls" of Sri Lanka. In addition to rice, they are expert cultivators of chillies, potato, red onion, tobacco and grapes. In the early seventies, before the free market economy was introduced to Sri Lanka, more than 75% of the red chillies and red onions and about 40% of potato was produced by the Northern farmers. During those times, we, as Sri Lankans, enjoyed these food commodities which were grown locally and sold at a reasonable price.

With post-war development in the North, we do not have to worry about their capabilities in agriculture. They were the best cultivators of rice and other subsidiary crops, such as, onion, potato, red chillies in the country

during the yester years. They possess the generations-old knowledge of sustainable agricultural systems, coupled with their commitment and dedication to this profession. They are the most practical and experienced farmers in the country. They lost their traditional farming practices, technologies and opportunities during the last three decades due to the civil disturbances. Now, they are liberated and need some incentives and assistance to reactivate their farming profession. During the past, they have lost their farming land, homestead, savings and even agricultural implements, but, it is certain that they have secured their traditional knowledge base, enthusiasm and interest and wanting of agriculture, the profession that they have brought forward from their forefathers through generations. Therefore, by lending a hand by extending a small support will be a valuable asset to them to get back to their farming profession.

In the East, the most important agricultural activity is rice cultivation. In addition, other major cultivations are cashew nut, tobacco and sugarcane. The community is predominantly Muslim and Sinhala. Unlike in the North, the community in the East does not have much extensive land. They also concentrate on livestock, fishing and off-farm labour.

Agricultural Industry

The major livelihood of the community in the Northern province is agriculture, and because of its contribution to the national food production and security, high emphasis was given in the past to develop agriculture. As a result, many agricultural research stations, training schools and extension centres were established in the past when the

national food production drive was first introduced to the country. During the past years, many varieties of rice and other subsidiary crops were introduced and many people were trained to promote national agricultural food production drive by the training institutes. In addition, new developments were made by introducing potato cultivation to the North.

Today, the agriculture in the North has taken a new turn. In the hot-humid regions of the Northern province, the so called "up country" or cool-loving vegetable crops, such as, cabbage, carrots, beet, leeks, knoll kohl, capsicum and even cauliflower, are grown under normal field conditions. This revolutionary transformation clearly demonstrated the ability of the new varieties withstanding harsh environments. Presently, we have to make use of these new technologies and select the right and most appropriate interventions to improve the crop productivity with our limited natural resources.

It is also imperative to understand that every new technology is not appropriate to our conditions at all times. Therefore, appropriate and sustainable ones should be screened and adopted. What is important, is a technology that harmonises with the existing production system and with the farmers' experiences and expertise. They possess a rich and time-tested traditional knowledge system which is unique to their social, cultural and environmental conditions. Therefore, to improve the soil and crop productivity, we should allow the farmers to select and adopt their own traditional methods which are low cost, eco-friendly and sustainable.

Before taking steps to develop agriculture, many things have to be

understood. Firstly, what the farmers ask for?, what is appropriate to the region?, what can they do? and what have they been doing?. Secondly, what are the country needs? For example, today the prices of potato and onions are sky rocketing. As of today, big onion market is in a critical condition due to unavailability of onions. Many are trying to give various excuses for the shortage, but in the end, the consumer is the person who is greatly affected. Both onion and potato were successfully cultivated and supplied to the local market at an affordable price in the past, before the civil commotion. But today, even though these two essential commodities which are commonly used by the households, are produced locally, the local consumer demands cannot be achieved. As a result, the prices of these essential commodities are exorbitant and beyond the purchasing power of the ordinary consumer. With the new era of the Northern agricultural development, more emphasis should be directed to such common and essential commodities which are profitable and appropriate, and in some instances, traditionally grown in this area.

Similarly, red dried chillies and green chillies fetch a high price in the retail market. The prices of green chillies, which is a supplementary product of red dried chillies production is around Rs. 250 to Rs. 300 per kilo. The locally-available dried red chillies are mostly imported stocks. These commodities are used in every household daily and have a very high market demand. Therefore, in the Northern agricultural development programmes, the emphasis should be on these crops which will give a high productivity, marketability and profit to the farmers. Agronomy of these crops

and other concepts are not novel to the Northern farmers. Therefore, farming of such crops will not be a difficulty.

In Sri Lanka, soybean is extensively used in many local food and feed preparations as a raw material. Presently, there is a demand for a large quantity of soybean for both food and animal feed industry. The entire local requirement is imported to Sri Lanka from China, the United States of America (USA) and India. Considering the climate and the soil factors, they are not only ideal for soybean, but also for many other edible oil crops, such as, groundnut and sunflower, can be easily grown in both North and East regions. Colossal amount of foreign exchange is spent on importation of other pulse food crops, such as, cowpea, red lentils, green and black gram, chick pea and other peas and lentils. Most of them can be and have been grown in the Northern and Eastern regions, and should be encouraged again or alternative substitutions to be found out.

Today, the local fruit industry is taken over by the imported exotic fruits. Local markets are flooded with imported citrus, pomegranate and grapes. Local mango prices are so high, and they are more expensive than imported fruits. All these fruits can be produced in the North and East without difficulty. A few years ago, the Northern region, especially Jaffna peninsula, produced the best mangoes of many delicious varieties and supplied to the local market at an affordable price. Grapes were so abundant, and the diversity of varieties so broad, and even the Department of Agriculture did not have those varieties. Their quality was in no way inferior to the imported ones. Irresistible Jaffna Nelli syrup, the delicious beverage

was once famous, not only in Jaffna, but also in the other popular towns and households in the country. There is a very high potential for such horticultural crop production. A few examples for high potential horticultural crops are grapes, pomegranate, dragon fruit, pineapple, guava, passionfruit, mango and cashew. In the Eastern province, with its hot climate, locally-improved pomegranate and varieties of mango can be grown without much effort.

Palmyrah is another agro-industrial product unique to Northern region of the country. Since the palmyrah production is launched and promoted by the Palmyrah Development Board, products of palmyrah can be made popular in the country. Traditionally, palmyrah products, such as, palmyrah spirits, jaggary, sweetmeats, starch and natural vinegar, were popular among the population islandwide. Bottled, fermented palmyrah sap (toddy) can be a refreshing beverage for the public in the other areas. Palmyrah jaggary is a valuable Ayurvedic product. Pure jaggary is very rare in the present day.

Today, it is very difficult to find a bottle of good quality Gingerly (Sesame) oil for food preparation or medicine. This has been a semi-commercial or cottage industry in the past, and this had become a source of family income.

Bee keeping or "apiculture" was once a very popular cottage industry in Sri Lanka. The country's demand was fully satisfied by the local bee honey production which was produced as a cottage industry or collected from the natural sources. North and East are very famous for the natural bee honey sources. Presently, with the popularisation of natural healthy food products and Ayurvedic traditional treatment systems, both by the local and

foreign sources, the demand for pure bee honey is increasing. Today, the available bee honey is mainly from imported sources, and the purity of the locally-produced bee honey is questionable. Therefore, a high potential exists to promote apiculture as a cottage industry or as a semi-commercial industry in both North and East.

Livestock Industry

In the North, livestock industry can be grouped into two categories; firstly the self- subsistence type and secondly the commercial or semi-commercial type. In the National Livestock Policy, dairy sector was given a high priority with the emphasis of the country becoming self-sufficient in milk. The targets are made to achieve 50% self-sufficiency in milk by 2015. Presently, Sri Lanka is self-sufficient in milk less than 17%. More than 80% of the milk and other dairy products consumed are imported into the country at an annual expense of 19 to 20 billion rupees. It is a known fact that the cow milk industry had never been existed in the North, as a major income-generating enterprise in the past. Milk was produced by the small dairy farmers, mainly for domestic consumption or local market. Dairy farming is only a subsidiary source of income. Traditionally, the cattle in the North were kept for limited supply of milk, and mainly for draught for lowland and upland farming. The government had established an Artificial Insemination Centre (AI Centre) to promote dairy cattle to upgrade the dairy cattle genetic potential for milk production, neglecting the major purpose of using cattle for draft. However, in the Northern province, the dairy cattle for milk is not promising due to the hot-humid environments and lack of quality basal feeds year round, especially roughage.

The Eastern province was traditionally well-known for buffalo milk products. In the past, other than the South, the best buffalo curd was produced in the East. The dairy farmers in the East have medium to large herds of local buffalo, whose production is not more than 3 – 4 litres per day, but, are high in quality and with minimum or zero inputs.

The other kind of dairy cattle in the Eastern province are the “white cattle” or the “Thamankaduwa” cattle breed whose ancestors were imported from India and were bred for draught purposes for transportation of goods using bullock carts in the past, before the automobiles were introduced to Sri Lanka. Thamankaduwa area is traditionally famous for cattle breeding from times of Kandyan kingdom, where the Royal Palace also maintained a herd of cattle and called “*Sudu Harak Panthiya*”. This herd was looked after by a noble cast known as “*Pattiya*”. This breed of white cattle is allowed to free graze in large herds, and the milk production is only 2 – 3 litres per day. However, the total collection is high due to the high population in a herd, and profitable because there are no inputs, which is similar to large herds of local cattle since there are no inputs there as well. However, milking is practised with few productive animals. Buffalo in the Eastern province do very well under harsh environments and on low-quality roughage feed. Knowing this fact, the governments in the past established many large buffalo farms in the province (Polonnaruwa, Welikanda, Thamankaduwa and Thrikonamaduwa). They even established the condense milk factory (*Parakum*) at Thamankaduwa from milk collected from East, mainly Buffalo milk. To date, no

political or government authorities have given as much emphasis on the development of buffalo, the most potential animal, but for many decades, investment and promotion have been on neat cattle which has been futile.

The environment and feeding in the North is no different to that in the East. Therefore, both North and East should concentrate on buffalo milk production than neat cattle production for milk. Under the present management and feeding, investment on cattle for milk production is a futile effort. However, recently under the “*Uthuru Wasanthaya*” and “*Nagenahira Navodaya*” the government is still planning to invest a colossal amount of funds on dairy development through dairy cattle, even with evident repeated failures in the past. It is still not too late to change or at least to make reasonable alteration on the investment on dairy cattle when more benefits are obvious from buffalo.

Cattle and buffalo rearing in the North and East have to be done similar to the Indian system of management, especially in feeds and feeding. Due to the unavailability of green roughage year round, the cattle or buffalo production have to depend on the utilisation of crop residues (mainly rice straw) and other agricultural by-products. Upgrading of available feeds and feeding strategies have to be adopted to make maximum use of such limited feed resources. The technology for upgrading low-quality roughage and other feed sources have been tested in this country for the last 3 – 4 decades and highly recommended. However, on wrong advice delivered to the political authorities and inefficiency and the lethargy of the other authorities, these technologies died a natural death.

Our neighbouring India, the world’s largest milk-producing country, produces milk with farmers who are similar to our dairy farmers or even poorer than them. They operate their small-holder dairies with meagre resources (land, water and green feed). Some farmers do not have even an inch of land. Compared to them, what our farmers have is luxury. Large proportion of their milk is produced with crop residues and other agricultural by-products. Therefore, introduction of exotic breeds or their crosses with high exotic blood and feeding of high cost concentrate feeds are not economical due to low milk production associated with low farm-gate price and overall economic returns. Therefore, with centuries of experience, the best option in dairy development in the North and East is the buffalo. In these areas, value addition to a litre of buffalo milk (milk into curd) with little or no additional expense can increase the value of the processed product three times the price of the raw milk. This will make the buffalo milk production more profitable and acceptable by the Northern and Eastern farmers compared to dairy cattle production. Goat thrives very well in the North and East. During the past years, train loads of goats were transported into Colombo daily from North and East. Even today, the best goat breeds are present in the North and the East. By looking at the national goat population, it is obvious that population of goats in the country stayed static during the past quarter century. In Sri Lanka, goats are mainly kept for meat (mutton) and raised entirely by the smallholders. Dry zone is called the “goat country”, and this includes North and East. Prior to the North and East civil commotions, the goat for the local market and to major cities were supplied mainly from these two regions. The famous goat

farm was also established at Murunkan. Later, this was moved down to Kottakachchiya of the North-Western province. North and East regions are ideal for goat industry than dairy industry. The climate, traditional technical know-how, the preference for goat milk by the people in these areas and the requirement of goat dung as a fertiliser for their cultivations made goat as a well preferred and accepted animal by the farming community in the North. The alkaline calcareous soil, exhibit some limitations in crop growth due to low pH. Unlike cattle or buffalo dung, goat dung and urine is acidic. This acidity in goat excreta makes the alkaline soil in the North neutral and improves the soil and crop productivity. So far, no commercial entrepreneur has ventured into this industry. The availability and abundance of shrub and fallow land gives a high potential for the expansion of this lucrative industry which needs less technology and care. High local genetic population and the cross-bred population are available in both North and East for further development of this species. High market demand and marketability for goats will pave opportunities for future investments on goat production for meat as a cottage industry, semi-commercial or commercial industry. Today, the most expensive meat is goat meat (mutton). A kilo of live weight of goat is about Rs. 250 – Rs.300. Mutton is sold at the butcher's stall minimum Rs. 600 – Rs.750 and at supermarkets Rs. 900 – Rs.1200, whereas, beef, pork and chicken are available at Rs. 380, 300, and 320, respectively. This shows that mutton is a luxury for the ordinary man. Although the mutton production has the lowest cost of production, the high market price is due to the low supply.

Poultry industry, both broiler and layer, can be another profitable enterprise which can easily be operated by commercial farmers / processors. They also can operate on a buy-back system with community similar to what is practised in the South. Eggs and broiler meat are fast moving items among the consumers without any religious, ethnic or cultural barriers.

One of the major barriers for the development of livestock industry is the feed. Especially in the concentrate feed industry, the grains play a vital role in supplying energy to the animals. Of feed grains, the major item that satisfies the energy requirement is corn (maize). Corn-based feeds are extensively used in the poultry industry in the production of eggs and broiler meat. More than 80% of the local corn requirements are imported to the country, and the supply is not very steady. The recent government policy on banning the importation of corn to the country put the poultry industry into a serious position. Both Northern and Eastern provinces have a high capacity for the production of corn and soybean which are two major constituents of the concentrate feeds for poultry. The corn and soybean farmers will be directly benefited by selling their products as a raw material for the animal feed industry or facilitate low-cost feed and feeding by purchasing the locally-produced feed materials to mix their own animal feeds.

Family Food Security

If each family can maintain their food security, the burden on the national economy can be eased. Our forefathers managed the household and food security within the family by the use of traditional foods and food habits. The North and East people are very famous for

this type of lifestyles. They believed and practised thriftiness and saving for tomorrow in their day-to-day life. Very rarely did they depend on the outside market. If they had to depend, it was only for the items that they could not produce. This is what should be inculcated into them, if they have forgotten these traditions. This made them a proud and self satisfied people. This living pattern is also a classic example for the Southerners to become self-reliant citizens. With the new development in the East and North, these traditional livelihood and living systems must be introduced to the new generation through their selected senior citizens. With the development, one must not enforce the western traditions and culture into them to replace their invaluable traditional culture, norms and values which will lead to cultural erosion and cause more irreparable damage more than what we have been experienced for the past 30 or more years. Therefore, authorities must be very cautious when the resettlement is done.

Home and Kitchen Gardens

In the North and East, the traditional people maintained their food security by producing their own food. They grew basic food items that are required by the family in their homesteads. They varied from vegetables, animal proteins, such as, milk, curd and eggs, fruits for desert, herbal medicinal plants and condiments and spices for the kitchen. Curry leaf, turmeric, tamarind, lemon grass, ginger, tulsi, green and other traditional chillies varieties were common in their kitchen gardens. A special kind of succulent drumstick and varieties of brinjals (egg plant) unique to Northern region, which are used in their traditional dishes, were also common. They strictly followed the kitchen and home garden concepts.

The fear is that through new agricultural development programmes and with the introduction of new technologies, what will be the future, the existence and the sustainability of the generations-old traditional knowledge system. Will it be completely replaced by the new inappropriate modern technology by the multinational agents and their intervention?

Backyard Livestock Production

Northern and Eastern region is famous for their backyard system of livestock production for self-subsistence. As mentioned earlier, a cow or at least one or few goats are kept and maintained with kitchen refuses and other locally- and freely-available feed to produce milk for the domestic consumption. The excess is fermented and eaten with the main dish or as a desert. Other domestic traditional preparations (butter milk and moru) are used as a healthy and nutritious beverage. The Northern farmer had a habit of drinking a glass of fresh cow milk before he starts his farming activities and work in the field until he gets his breakfast at late morning. There is also a belief in the traditional medicine that the milk of true local or indigenous cows contains non-allergen proteins. Every family kept few local chickens which are hardy and long lived to produce eggs for the family nutrition. Even today, such eggs that are produced from kitchen refusals and natural scavenging, are considered as more nutritious than the farm eggs. They brood their own stock. This has interwoven with their lifestyles. With the post-war new developments, will these traditional food production systems and food habits disappear?

Long-Term Consequences of Modernisation of Agriculture

With the introduction of so called "green revolution", we completely

destroyed our traditional food types, food production systems, and feeding habits. Green revolution was introduced to accelerate the national food production drive, and by replacing traditional production systems with modern technology and traditional local varieties which were highly adapted, healthy and nutritious and sustained over generations by new hybrid seeds. After years, we all realised that we have never achieved the self-sufficiency or even near self-sufficiency. Instead, we were rewarded with new technology that we have to eternally depend on foreign inputs, such as, seeds, fertilisers and pesticides. Since they are hybrid seeds, after every harvest, the farmer has to depend on imported seeds. Along with the so called new technology, new pest and disease attacks became obvious and colossal amounts of money had to be spent on treatments to control them.

The product, produced after spending such a large amount of money, is not healthy and that can no way be compared to the same product produced traditionally. Finally, this is a humble request made to the policymakers and the political authorities to be sensible in making decisions and introducing interventions. Please look back and understand the consequences we are facing for the wrong decisions taken some decades ago. If anybody gets the past picture clear, then the future vision will not be bleak.

Important Facts Not to Forget

When heading for accelerated national development, often technologies that have only narrow short-term benefits are used. Such technologies ignore the long-term sustainability and the environment. In such situations, only the short-term and temporary

economic benefit is given prominence and considered. The social, cultural, environmental impacts are often ignored. We are in an era that is looking for an accelerated growth in the North and East. One must not forget that the people in the North and East have not had any access to newly-introduced technology, but, they were very confident and experienced with their traditional technology. Therefore, introduction of new technology or any other intervention into their generations-old system have to be done with caution.

We have the bad experience of so called "Green Revolution" introduced to Sri Lanka some fifty years ago. It destroyed our traditional and generations-old agrarian system. Today, whatever the opinion, we have almost lost our food security. All our generations-old traditional, but sustainable and eco-friendly agricultural systems have been completely replaced by inappropriate borrowed western technology. Resistant local traditional seed sources have completely extinct. Introduced hybrid seeds heavily depend on imported inputs. Presently, Sri Lankan farmers have no choice, but to depend on everything from imported seeds to other agricultural inputs. Even for home gardening, people have to depend on imported items. New pests and unhealthy agricultural products have taken over the food supply.

Therefore, the authorities must take precautions when planning and introducing interventions to the North and East regions through their "Uthuru Wasanthaya" and "Nagenahira Navodaya" programmes, especially in the food production sector.

